Development of alginate–gum Arabic beads for targeted delivery of protein

Abstract

Controlled release beads were prepared by using the combination of alginate and gum Arabic through ionotropic gelation method. Bovine serum albumin was used as model protein for *in vitro* assessments. The effect of amount of sodium alginate and gum Arabic as the factor affecting protein encapsulation efficiency and protein release were optimized and analyzed by using RSM-FCCD. It was observed that protein encapsulation efficiency was increased and protein release was decreased with the increase of both of the amount of sodium alginate and gum Arabic, used as polymer blend. The optimized beads showed high encapsulation efficiency (87.5 ± 3.65%) with suitable protein release (100% protein release after almost 4 hrs). The swelling of beads were highly influenced by pH of dissolution medium. These beads were also characterized by FT-IR spectroscopy, SEM and TA for protein-excipients interaction, beads surface morphology and beads strength, respectively. These calcium alginate/gum Arabic beads have good potential to be used as delivery vehicle for protein drugs.

Keyword: Alginate; Gum Arabic; Controlled release; Encapsulation; Targeted delivery